

*REMARKS/ARGUMENTS**The Pending Claims*

Claims 1-50 and 96-122 are pending and are directed to a continuous method for preparing acoustical panels having a Normal Incident Sound Absorption of at least about 0.32. Reconsideration of the pending claims is respectfully requested.

The Amendments to the Claims

Claim 1 has been amended to recite the steps of (i) forming a mixture comprising water and calcined gypsum and (ii) adding foaming agent to the aqueous calcined gypsum mixture. This amendment is supported by the specification at, for example, page 15, paragraph [0037]. Claims 51-95 have been cancelled as being directed to a non-elected invention, without prejudice to Applicants' right to pursue these claims in a divisional application. New claim 96 has been added and recites that the acoustical panel has a density of from about 12 lb/ft³ to about 20 lb/ft³. This amendment is supported by the specification at page 6, paragraph [0016]. New claims 96-106 are the same as claims 2-11 and 34 but are dependent on claim 95. New claims 107-112 recite combinations of claims 1-11 and 34. New claims 113-122 recite combinations of claims 45, 2-11 and 34. No new matter has been added by way of these amendments.

Summary of the Office Action

Claims 1-32 and 35-50 stand rejected under 35 U.S.C. § 103(a) as obvious in view of Weldon et al. (i.e., U.S. Patent Appln. Publn. 2004/0026002) alone, or in combination with, Baig (i.e., U.S. Patent 5,922,447), Derusco et al. (i.e., U.S. Patent Appln. Publn. 2004/0241271), WO 02/098646, Sethuraman et al. (i.e., U.S. Patent 6,783,587), Savoly et al. (i.e., U.S. Patent 5,158,612), Applicants' allegedly admitted prior art (i.e., paragraphs 24 and 36 of the specification), EP 1088632, White (i.e., U.S. Patent 4,327,146), McLarty et al. (i.e., U.S. Patent Appln. Publn. 2004/0152379), and/or Delcoigne et al. (i.e., U.S. Patent 4,288,263). The Office Action does not address the basis for the rejection of claims 33 and 34, which are indicated as rejected in the Office Action summary.

The Obviousness Rejections

The obviousness rejections are respectfully traversed in part, and are moot in part.

A. The Weldon et al. Reference

Weldon et al., the primary reference cited in the Office Action, fails to teach or suggest a method for preparing an acoustical panel. To the contrary, Weldon et al. is directed to a method of preparing gypsum board, such as wallboard, which does not have a Normal Incident Sound Absorption of at least about 0.32 as recited in the pending claims. Gypsum boards and acoustical panels are very different materials. Among other differences, acoustical panels must contain a much higher percentage of void space and be much less dense than gypsum board materials in order to impart the panel with sound absorption properties. For example, acoustical panels preferably have about 35-60% void volume and a density of about 10-25 lb/ft³, more preferably about 12-20 lb/ft³. See, instant specification, at page 6, paragraph [0016]. Contrastingly, gypsum board such as that taught by Weldon et al. typically has a density of about 32-35 lb/ft³. See Weldon et al., at page 5, paragraph [0064].

Contrary to the assertion in the Office Action, obtaining a method for manufacturing a panel having sound absorption properties from a method for manufacturing a gypsum wallboard would involve considerably more than "routine skill in the art." As described in the background of the instant application, conventional acoustical panels are manufactured by a molding process or by a paper-making process from mixtures of mineral wool fibers, binder and other fillers. Initial attempts to prepare such acoustical panels on a continuous gypsum board line were unsuccessful because the mineral wool material would break apart. Cementitious materials impart strength and sag resistance to the acoustical panels; however, it is well known to one of ordinary skill in the art that set gypsum material is not inherently an acoustically absorbent material. Accordingly, acoustical panels comprising set gypsum included very large mechanically-formed holes that passed through the depth of the panel, or included an acoustically absorbing backing sheet. See page 3, paragraph [0007].

Applicants have discovered a surprising method of preparing acoustical panels having sound absorption properties using a continuous board manufacturing line comprising forming a mixture of water and calcined gypsum and adding a foaming agent thereto. Acoustical

panels prepared in accordance with the invention recited in the pending claims have an inherently acoustically absorptive, porous, open-cell structure. Although Weldon et al. teaches that foaming agents can be added to lower the core density of the gypsum board product, see page 4, paragraph [0040], nothing in Weldon et al. recognizes that the foaming agent be used to impart acoustical properties. To the contrary, Weldon et al. teaches that the foaming agent is optional. See page 4, paragraphs [0053]-[0054]. Indeed, nothing in Weldon et al. teaches or suggests a gypsum board with sufficient porosity to be considered acoustic, and in particular a gypsum board having the acoustical properties recited in the pending claims.

B. The Secondary References

Nothing in Baig, Derusco et al., WO 02/098646, Sethuraman et al., Savoly et al., EP 1088632, White, McLarty et al., Delcoigne et al. or Applicants' allegedly admitted prior art cures the deficiencies of Weldon et al.

Baig discloses a lightweight gypsum board panel comprising gypsum, perlite, and fibers with good nail pull values. Baig teaches against the use of a foaming agent to reduce the weight of the gypsum board. Derusco et al. discloses an extruded board material prepared using a cementitious binder. WO 02/098646 discloses a gypsum board panel having inorganic fiber face sheets. Sethuraman et al. discloses compositions useful for the preparation of lightweight, high strength wallboards, comprising calcium sulfate hemihydrate, water, starch, and foam. Sethuraman et al. teaches that the foam is added to lighten the weight of the wallboard. White discloses gypsum wallboard prepared with a foaming agent. McLarty et al. discloses gypsum wallboard that optionally contains a foaming agent and that preferably has a density between 25 and 100 pounds per cubic foot. Delcoigne et al. discloses a method for producing plaster (gypsum) board comprising layers having different densities.

Savoly et al. discloses a foaming agent for use in gypsum wallboard materials. Contrary to the assertion in the Office Action, nothing in Savoly et al. teaches or suggests that the foaming agents disclosed therein, including that of formula II, will provide an open cell void structure, as recited in claims 24-26. Whether a foaming agent produces a closed or open cell structure is not determined only by the chemical formula of the foaming agent. Other factors, including the

amount of void space and the presence of other components such as fibers and fillers, play an important role in void structure ultimately produced.

Nothing in Baig, Derusco et al., WO 02/098646, Sethuraman et al., Savoly et al., White, McLarty et al. and/or Delcoigne et al. teaches or suggests that the gypsum boards have sufficient void space and/or open cell configuration to give rise to acoustical properties as recited in the pending claims.

Of all of the cited references, only EP '632 relates to an acoustical panel. However EP '632 fails to teach or suggest a method comprising (i) forming a mixture comprising water and calcined gypsum and (ii) adding foaming agent to the aqueous calcined gypsum mixture. To the contrary, EP '632 discloses a process comprising the steps of (i) *dry* mixing the cementitious material and fibers, (ii) aqueous mixing water, surfactant and air to create foam and then (iii) combining and mixing the aqueous foam and *dry* cementitious mix to form a foamed cementitious material. See, e.g., col. 4, lines 17-23; col. 5, lines 46-60; col. 10, line 53 to col. 12, line 20. In addition, nothing in EP '632 teaches or suggests a method comprising the formation of a second mixture for use as a densified layer precursor, as recited in claims 45-50.

With respect to claims 35, 36, and 37, regarding applicant's allegedly admitted prior art at paragraph [0024] of the specification, Applicant's statement is not an admission regarding any prior art method of producing acoustical panels. As stated, the use of forming plates or rollers is well known in the patentably distinct art of producing gypsum wallboard. Nothing in the prior art suggests the application of forming plates or rollers in conjunction with acoustical panels. In addition, with respect to claim 36, regarding applicant's allegedly admitted prior art at paragraph [0025] of the specification, Applicant's statement is not an admission that fluidization membranes are known in the art. To the contrary, the instant specification suggests that Dynapore screens, such as models LFM-1 or LFM-10, are suitable for use as part of a fluidization membrane as taught in paragraph [0025]. One of ordinary skill in the art will appreciate that Dynapore Models LFM-1 and LFM-10 are not known to be useful as fluidization membranes as suggested in the Office Action. Finally, with respect to claim 50, regarding applicant's allegedly admitted prior art at paragraph [0036] of the specification, Applicant's statement is not an admission that it is known to use edge mixers to beat out foam from the mixture to generate densified portions of an acoustical panel. Rather the specification merely

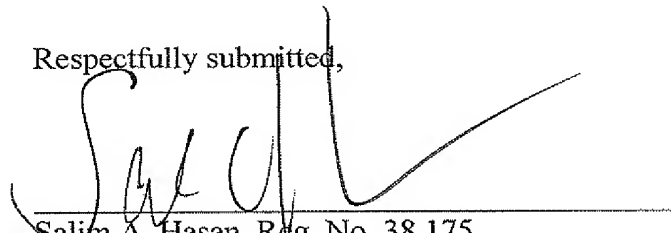
notes that edge mixers are known in the patentably distinct art of gypsum wallboard manufacture.

Since Weldon et al. alone, or in combination with any of the cited references, fails to teach or suggest each and every element of the pending claims, the obviousness rejections are improper and should be withdrawn.

Conclusion

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Salim A. Hasan', is written over a horizontal line.

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